DOCUMENT RESUME

ED 170 641 CG 013 432

AUTHOR Flay, Brian R.
TITLE A Catastrophe Theory Model of Attitude Change.
PUB DATE Aug 78
NOTE 19p.; Paper presented at the Annual Convention of the American Psychological Association (Toronto, Ontario, Canada, August, 1978)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Bias; *Changing Attitudes; *Communication (Thought Transfer); *Credibility; *Information Theory; *Motivation Techniques; *Persuasive Discourse; Self Concept; Speech Skills; Verbal Communication
IDENTIFIERS *Catastrophe Theory

ABSTRACT

Within the large body of literature on attitude change, many diverse and sometimes apparently conflicting findings have been reported. A catastrophe theory model of attitude change that attempts to synthesize many of these diverse findings is proposed. Attitude change is usually monotonic with message content or the strength of the persuasion attempt, although not always isomorphic with it, suggesting message strength as a normal factor. When commitment to a prior attitudinal position is high, attitudes are usually extreme and bimodal, suggesting commitment as a splitting factor. It has been reliably found that a message from a source of high credibility (or any other acceptance cue) will produce greater attitude change than a message from a source of low credibility (or any other rejection or discounting cue). A derogatory message or source (or any other reactance cue) tends to produce attitude change in the direction opposite to that interded by the message. These findings can be accounted for a bias factor to represent any message acceptance or rejection cues. Ego-involvement, which is associated with a tri-modal attitudinal response surface involving latitudes of acceptance, rejection, and noncommitment, is suggested as a fourth factor to form a butterfly model. (Author)

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ED170641

A Catastrophe Theory Model of Attitude Change

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Paper presented at the symposium "Catastrophe Theory in Psychology" at the American Psychological Association Annual Convention, Toronto, August 1978.

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Abstract

Within the vast attitude change literature many diverse and sometimes apparently conflicting, findings have been reported. A catastrophe theory model of attitude change that promises to synthesize many of these diverse findings is proposed. Attitude change is usually monotonic with message content or the strength of the persuasion attempt, although not always isomorphic with it, suggesting message strength as a normal factor. When commitment to a prior attitudinal position is high, attitudes are usually extreme and bimodel, suggesting commitment as a splitting factor.

It has been reliably found that a message from a source of high credibility (or any other acceptance cue) will produce greater attitude change than a message from a source of low credibility (or any other rejection or discounting cue). A derogatory message or source (or any other reactance cue) tends to produce attitude change in the direction opposite to that intended by the message. These findings can be accounted for by a bias factor to represent any message acceptance or rejection cues. Ego-involvement, which is associated with a tri-modal attitudinal response surface involving lattitudes of acceptance, rejection, and noncommitment, is suggested as a fourth factor to form a butterfly model.

The resulting model is found to parsimoniously incorporate many diverse findings and theories in the attitude change literature, including the phenomena of reactance, commitment, dissonance, the foot-in-the-door technique, primacy and recency effects, and the sleeper effect. It also leads to new and unique predictions regarding some of these, which remain to be tested.

A Catastrophe Model of Attitude Change

Brian R. Flay

If I wanted to use a persuasive message to influence your attitudes toward some issue, five known determinants of the success of my attempt are:

1) the content or power of my message;

2) your present attitude;

3) your level of commitment to your present attitude;

4) my credibility, expertise, or trustworthiness;

and 5) your level of ego-involvement in the issue, or the salience of the issue to you.

How do these factors interact with one another to determine attitude change? The properties of a catastrophe theory model are suggestive. Let us consider only the first three of the above factors for a moment.

A Two-Factor (Cusp) Model

Attitude change is usually monotonic with the content or power of a persuasive message. While it is admittedly difficult to operationalize these concepts, I propose message content or the power of the message as the normal factor in a cusp catastrophe model for predicting attitude change.

The more committed you are to a prior attitudinal position, the more extreme and bimodal your attitudes are likely to be and the more difficult it will be for me to influence them. Thus, I suggest level of commitment to a prior attitudinal position as a splitting factor in the cusp model of attitude change.

Show Figure 1 About Here

The resulting model is shown here in Figure 1. If your commitment to any prior attitudinal position is low, you will be at the back of the response surface, and it should be relatively easy for me to influence your attitudes. If, on the other hand, your initial commitment is relatively high, you will be at the front of the response surface. Your attitudes are likely to be extreme and it will not be so easy for me to influence them. You are likely to remain committed to your prior position, or deviate only slightly from it, until my message becomes so convincing that you suddenly switch from one extreme position to the opposite. The higher your initial commitment, the more powerful my message will have to be to influence you, and the more extreme your shift in attitude if and when it does occur.

Note that your present attitudinal position is already included in this model as a determinant of attitude change. If you already hold the attitudes advocated in my persuasive message I will have little effect. If you hold a position opposite to that advocated in the message, the effect of my message will depend on your level of commitment. At low commitment your attitude will be easily influenced. At high commitment, your attitude will be difficult to influence. The power of the message required to influence your attitude will depend on both your prior attitudinal position and your level of commitment to it.

The cusp model as presented so far then, says that changes in the power or content of a persuasive message will lead to monotonic changes in attitude. Sometimes these attitude changes will be smooth (i.e., when initial commitment is low) and sometimes they will be discontinuous (i.e., when initial commitment is high). On the other hand, changes in commitment (with message content or power held constant) always result in smooth changes in attitude.

Furthermore, increases in commitment can lead to positive or negative changes in attitude, depending on the power of the persuasive message.

Support for the Properties of the Cusp Model

Let us now review the support for these properties.

Discontinuity. The smooth relationship between the power of a message and attitude change at low levels of prior commitment is easily understood -- it is almost banal --, and there is much data to support it. The discontinuous relationship predicted under high levels of prior commitment is of greater interest.

Studies of commitment (Brickman, in preparation; Kiesler, 1971), involvement (Sherif, Sherif & Nebergal, 1965; Sherif, Kelley, Rodgers, Samp & Tittler, 1973), or both (Halverson & Pallak, 1978) have demonstrated that attitudes held at high levels of commitment or involvement are usually extreme (i.e., bimodal) and are very difficult to change. This evidence comes from studies where level of commitment was experimentally manipulated (e.g., Kiesler, 1971) as well as studies where subjects' own (i.e., self-selected) levels of involvement were considered (e.g., Sherif et al., 1965, 1973). As an example of the former, Kiesler and Mathog (reported in Kiesler, 1971) manipulated commitment by inducing their subjects to engage in a particular behavior few (0 or 1) or many (3) times. Subjects who had engaged in a behavior many times (i.e., high commitment) were resistant to subsequent attacks on their behavior. Subjects who had engaged in the behavior only once or not at all (i.e., low commitment) were not resistant to a subsequent attack on their behavior.

Hysteresis. The property of hysteresis follows from the property of discontinuity. It has been shown that a person who is highly committed to an attitudinal position will not easily change to an advocated position

in the opposite direction. However, it is also intuitively plausible that as the strength of a persuasive message increases, the tendency toward attitude change should increase. Eventually, the subject will give in and switch their position to agree with that advocated in the message. The exact content and power of a message necessary to induce this sudden change will depend on the subjects initial attitudinal position as well as his/her commitment to it. This is the property of hysteresis -- the attitude change occurs at different levels of the normal factor, i.e., different message content, depending on the (direction of) initial attitude.

Unfortunately, this intuitively plausible property of the cusp model finds little direct support in the research literature. There is, however, much indirect support, and it can also be derived from other theoretical perspectives that provide insights into the psychological mechanisms that might underly the properties of the cusp model.

Psychological Mechanisms. Psychological commitment is only one of the psychological mechanisms or dynamics that might underly the properties of the cusp model of attitude change. Psychological commitment to an attitudinal position increases with any overt expression, especially behavioral expression, of the attitude and the cost of that expression. Any such manipulation in other theoretical orientations can thus be considered as manipulations of commitment. Other areas of research where this has been done include:

1) Dissonance theory (Festinger, 1957; Wicklund & Brehm, 1976), where performing a behavior or writing a counterattitudinal message under conditions of low justification leads to attitude change that is resistant to subsequent change (e.g., Collins & Hoyt, 1972);

2) Self-perception theory (Bem, 1972), often interchangeable with dissonance theory (Greenwald, 1975), where the observation of

one's own behavior leads to attitudes which are resistant to change (without also changing to behavior);

3) Primacy-recency effects, where stating one's position after hearing or reading the first of two persuasive messages leads to a resistance to the second message, i.e., a primacy effect, as opposed to a recency effect when attitudes are not stated until after both messages have been heard or read (e.g., Miller & Campbell, 1959; Walster & Prestholdt, 1966; Wilson & Miller, 1968);

4) Attitudinal innoculation (McGuire, 1964), where the knowledge that defense of a persuasive attack on one's beliefs is possible (and such knowledge is most likely to be acquired under conditions of high commitment or involvement) leads to a resistance to persuasive messages (McGuire, 1961, 1964; McGuire & Papageorgis, 1961; Rogers & Thistlethwaite, 1969);

5) Active vs passive acquisition of a message (e.g., Watts, 1967), where composing one's own counterattitudinal message leads to greater and more persistent attitude change than reading or hearing a message prepared by someone else;

6) Social learning theory (Bandura, 1969, 1977), where active participation in a behavior leads to greater and better maintained behavior changes than passive acquisition;

7) The use of payments to increase commitment to a group or attitudinal position, where greater commitment leads to larger and better maintained changes;

8) Conformity research (e.g., Asch, 1956; Gerard, 1965), where the initial judgements (and thus public commitments) heavily influence the course of later judgements (Gerard, 1965).

9) The temporal persistence of attitude change (Cook & Flay, 1978), where we find that the effects of a persuasive message usually decay over time unless commitment or involvement can be induced.

In all of the above areas of research, and probably others as well, it seems clear that any manipulation that might increase commitment results in more and better maintained attitude change, thereby demonstrating the properties of discontinuity and hysteresis. Thus, psychological commitment, dissonance, self-perception, attitudinal innoculation, psychological justification, etc., are all possible mechanisms that might underly and explain the properties of discontinuity and hysteresis in the cusp model of attitude change.

Divergence. The property of divergence in the cusp model focuses on the middle range of the normal factor. If a persuasive message has little power, but is just to the right of the singularity, then any increase in commitment (the splitting factor) will lead onto the upper response surface of Figure 1 and an attitude change in the direction of that advocated in the message. If we are to the left of the singularity any increase in commitment will lead onto the bottom response surface and an attitude change opposite to that advocated in the persuasive messages. This property is supported by findings from many areas of social psychological research, but one not yet discussed is the foot-in-the-door technique (Freedman & Fraser, 1966; Seligman, Bush & Kirsch, 1976). With minimal persuasion attempts involved, a request to make a large commitment to an unfamiliar attitudinal or behavioral position usually meets with rejection. That is, attitude is on the lower response surface of Figure 1. A request for an initially small commitment, however, more often leads to an acceptance, and attitude moves onto the upper response surface. From this position, a subsequent large request

is more likely to be successful, and attitudes advance further forward on the upper sheet.

A Three-Factor Model

Let us now consider the fourth likely determinant of the success of a persuasive message, the credibility, trustworthiness, or expertise of the source of that message. We know that a source of high credibility usually causes greater initial attitude change than a source of low credibility. An extremely low credibility or derogatory source will sometimes even arouse reactance (Brehm, 1966, 1972) and attitude will change in the direction opposite to that advocated in the message. I propose that any message acceptance or rejection cue acts as a bias factor in the catastrophe model of attitude change.*

Show Figure 2 About Here

As shown in Figure 2, any acceptance cue has the effect of moving the attitude response surface to the left and raising it. Thus, any particular message will have greater effects on attitudes when associated with an acceptance cue than it otherwise would. Alternatively, a less powerful message is needed to achieve the same level of attitude change when associated with an acceptance cue than when there is no acceptance cue.

An acceptance cue may be any indication that a persuasive message is credible and acceptable. A source of high credibility, trustworthiness, or expertise is the traditional manipulation of an acceptance cue, and the results of such manipulations support the proposed model.

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* This three-factor model may be a cusp with bias added, i.e. $x^3 = a + bx + cx^2$, or a butterfly, i.e., $x^5 = a + 6x + cx^2 + dx^3$, at positive values of d. The properties of the two models are similar, and which is most appropriate can only be determined when empirical data becomes available.

Another way of increasing acceptance of a message is by the use of high social support. Social support can be regarded as an acceptance cue, and it usually leads to greater and more persistent attitude change when associated with a persuasive message (e.g., Cook & Wadsworth, 1972). Repetition of a persuasive message is another way of increasing the acceptance of message content, and also usually increases attitude change and its persistence (see Cook & Flay, 1978). Attribution theory (Kelley, 1967) provides further support for the effect of acceptance cues. A message that is heard many times from different sources in different circumstances is more likely to lead to attitude change that persists than a message that is heard only once or from only one source or in only one set of circumstances.

A strong rejection cue has the effect of moving the attitude response surface to the right and raising it (See Figure 2). Thus, a particular message will have less effect on attitudes when associated with a rejection cue than it otherwise would.

A rejection or discounting cue may be any cue that indicates that a persuasive message should be rejected or discounted. A source of low credibility, trustworthiness, or expertise is the traditional manipulation of a rejection or discounting cue. Others include low social support and low agreement of other sources at other times, etc. These have all been demonstrated to minimize attitude change due to a persuasive message.

When reverse social support, that is social pressure against, and derogation are used, a reactance cue can be assumed. Under these conditions, attitudes have been demonstrated to change in the direction opposite to that advocated in the message (e.g., Brehm, 1966, 1972).

The three-factor model also predicts sleeper effect phenomena (Hovland, Lumsdaine & Sheffield, 1949). A change in attitude that occurs some significant time after a persuasive communication rather than immediately after it, is

predicted to occur only if a rejection or discounting cue that inhibits initial attitude change (because of the raising and moving to the left of the S-shaped response surface) is then dissociated from the message over time while the message simultaneously retains its persuasive power. These conditions have been independently derived from the discounting cue hypothesis (Cook, Gruder, Hennigan & Flay, 1978) and recently led to successfully setting up the conditions necessary for obtaining a sleeper effect (Gruder, Cook, Hennigan, Flay, Alessis & Halamaj, in press).

If commitment or involvement is low, the three-factor catastrophe model predicts that the sleeper effect will occur gradually over time, isomorphically with the dissociation of the discounting cue from the persuasive message (at least with group data). If commitment or involvement is high, however, this model predicts that the sleeper effect will occur suddenly at that point in time when dissociation is complete, and that it will be to a higher level than at lower levels of commitment or involvement. These predictions appear to be unique to the catastrophe model and remain to be tested.

A Four-Factor Model

The two- and three-factor catastrophe models described so far appear to have wide generality and can encompass much of what we know about attitude change phenomena. Suggestion of a tri-modal attitudinal response surface is required before the consideration of a four-factor butterfly model is warranted. The work of Sherif and his colleagues on lattitudes of acceptance, rejection, and noncommitment provides this suggestion. Under very restrictive conditions, it appears that attitudes are indeed trimodal, and the response surface may indeed be shaped like the (also restrictive) middle area of the butterfly model (See Figure 3).

Show Figure 3 About Here

In such a model, what would the fourth factor, the butterfly factor, be? Again, Sherif's work provides a lead. While I have used the term involvement interchangeably with commitment so far, I believe that ego-involvement in an issue is conceptually different from commitment to (or involvement in) an attitudinal position. Although an increase in ego-involvement in an issue probably almost always leads to greater commitment to a particular attitudinal position, low ego-involvement is not always accompanied by low commitment. Thus, I suggest that ego-involvement in an issue or the salience of an issue might be represented by the butterfly factor in a butterfly model of attitude change. This extended model has some new properties and might provide improved descriptions of some phenomena such as the foot-in-the-door technique, which I have speculated on elsewhere (Flay, 1977*). The new predictions become rather involved, and we are, unfortunately, running out of time, so I will not develop them further here.

Conclusions

The catastrophe theory model of attitude change that I have proposed here can be seen to be very parsimonious, synthesizing many diverse, and sometimes seemingly contradictory, findings and theories from the vast attitude-change literature. It is as if the many different approaches to the study and explanation of attitude change have each been describing but a part of a much larger whole which is encompassed by the proposed model. In a Behavioral Science paper to appear in September (Flay, 1978) I even suggest that many other diverse attitude-related phenomena, such as inter-personal attraction, worker satisfaction, student evaluation of courses

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* While the two-factor model proposed in the 1977 manuscript is different (and inferior) from that described here, I don't think the ideas suggested by the butterfly model are effected too much by these differences.

(Frey & Flay, 1978), peer review systems, and subject behavior in psychological experiments might all be encompassed by this single model.

We must remember, however, that this whole paper has been very speculative, and while the model may have some descriptive and pedagogical value, it remains purely speculative until it has been subjected to direct empirical testing. I have elsewhere (Flay, 1978) discussed some of the problems of testing catastrophe models in psychology and how they may be overcome. Until such tests have been conducted we must maintain an open mind about this model, perhaps using it as a framework for further thinking, but not regarding it as any sort of final statement.

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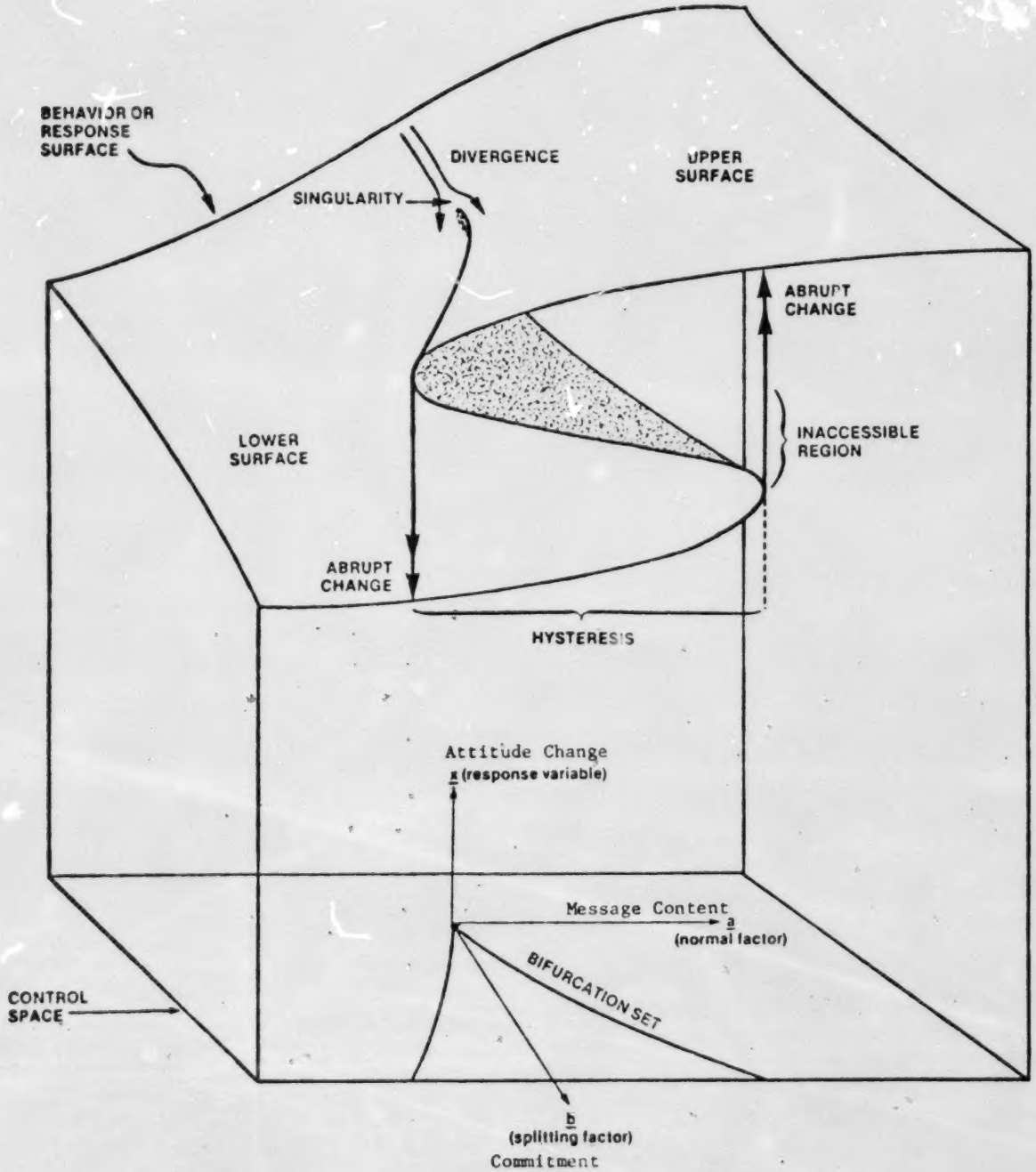
Figure Captions

Figure 1: A cusp catastrophe model of attitude change.

Figure 2: A three-factor catastrophe model of attitude change.

Figure 3: A butterfly catastrophe model of attitude change, with an illustration of lattitudes of acceptance, rejection, and noncommitment.

FIGURE 1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LOWER SURFACE
ABRUPT CHANGE
HYSTERESIS
Attitude Change
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Message Content
a
(normal factor)
BIFURCATION SET
CONTROL SPACE
b
(splitting factor)
Commitment

FIGURE 2

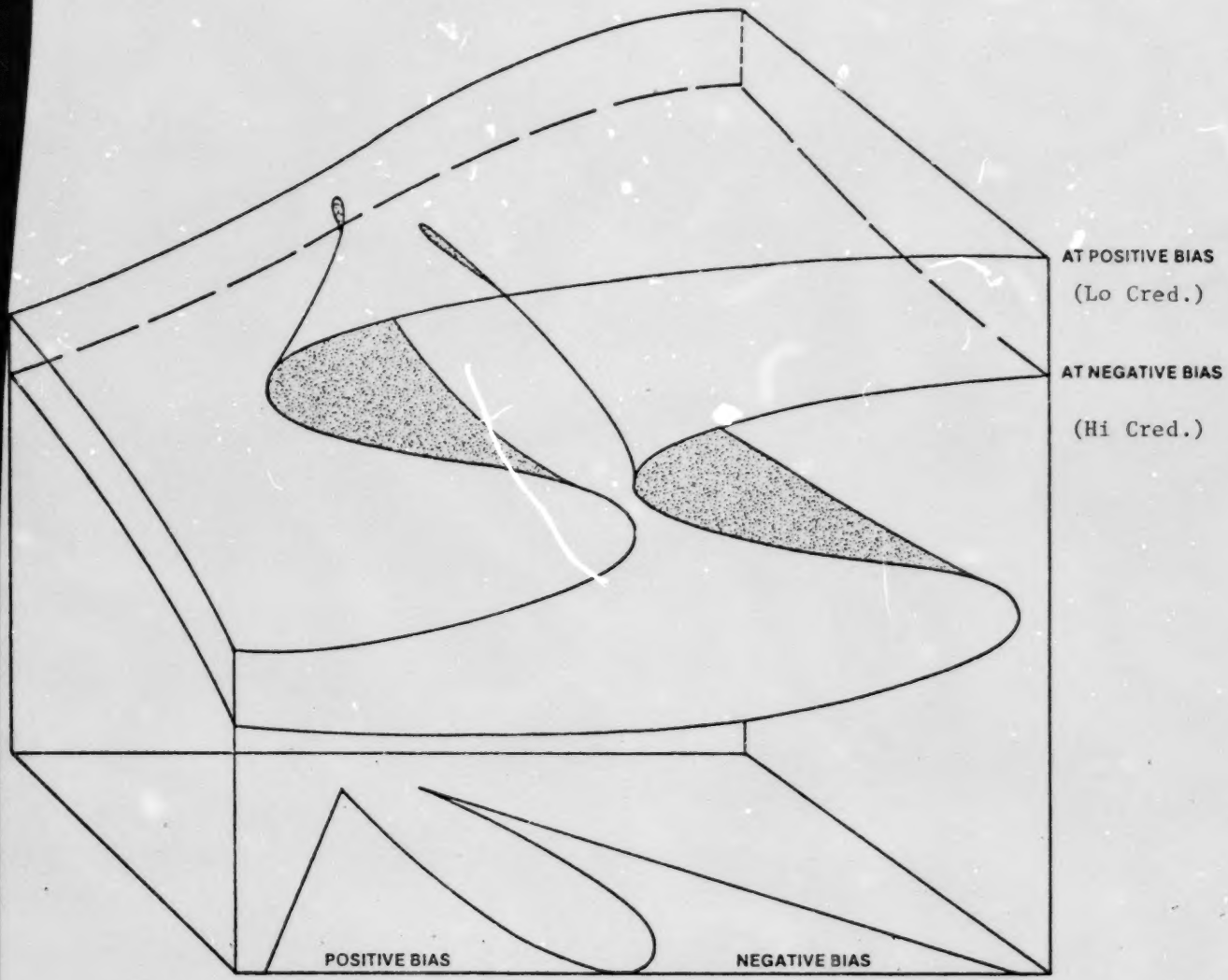
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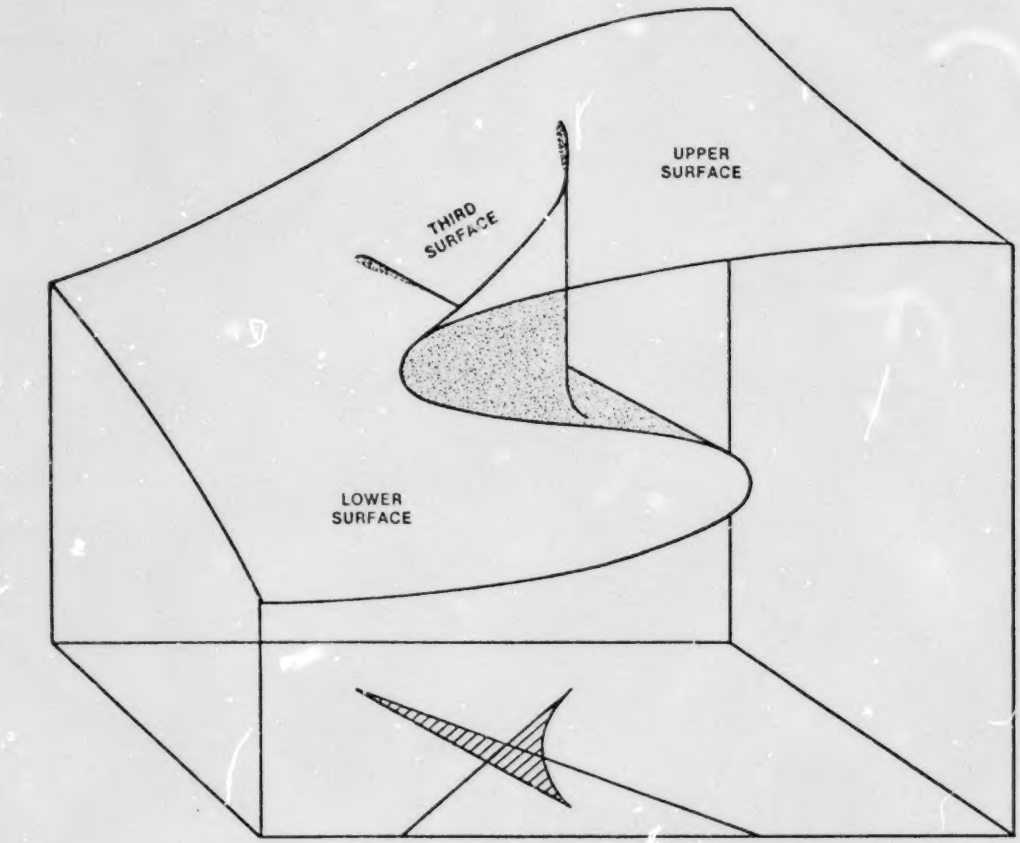
FIGURE 3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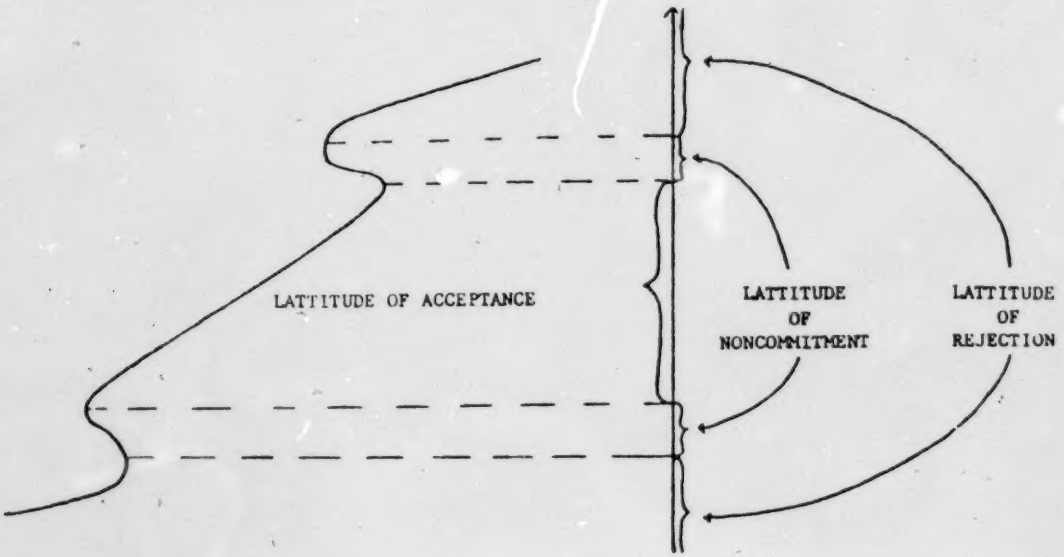
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